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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,561	10/31/2003	Johnny Zhong	15436.132.1	1109

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EXAMINER

LEPISTO, RYAN A

ART UNIT

PAPER NUMBER

2883

DATE MAILED: 08/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

3/1

Office Action Summary

Application No.

10/698,561

Applicant(s)

ZHONG ET AL.

Examiner

Ryan Lepisto

Art Unit

2883

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 July 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 5-30 is/are pending in the application.
- 4a) Of the above claim(s) 9-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5-8 and 23-30 is/are rejected.
- 7) ☒ Claim(s) 7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. **Claim 7** is objected to because of the following informalities: The claim states that each thin film layer is about $\frac{1}{4}$ of a medium wavelength. It is not clear that this is referring to a length (one-quarter wavelength thick layers). What about the layer is $\frac{1}{4}$ of a medium wavelength? Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. **Claims 1-2, 8, 23-25 and 27-28** are rejected under 35 U.S.C. 102(e) as being anticipated by **Adair et al (US 6,490,381 B1)** (Adair). Adair teaches a thin film interleaver (Fig. 7A) comprising a dual fiber (402, 414) GRIN lens (418) in optical communication with another element (any other element in the system including thin film portions) collimator (generally labeled 700) comprising an optical substrate (the lens itself, 418), a thin film portion (710, 712, 714, 716) that pass or reflects a adjacent wavelength bands, multiple cavities (702, 704) that include the layers (710, 712, 714, 716) and spacers (706, 708), index matching layers (not shown) at the two ends of the

Art Unit: 2883

cavities (left of 710 and right of 716, column 12 lines 17-20) that are used to match surroundings (air for example), an input fiber (402) for inputting an optical signal of a plurality of channels, an output fiber (406) for receiving passed wavelengths, an output GRIN lens collimator (420) optically coupled to the dual fiber collimator GRIN lens (418) and output fiber and a reflection fiber (424) for receiving a group of channels reflects by the thin film portions (column 11 line 11 – column 12 line 20).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 5 and 6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Adair as applied to claims 1-2, 8, 23-25 and 27-28 above, and further in view of **Tai et al (US 6,341,040 B1)** (Tai).

Adair teaches the interleaver described above.

Adair does not teach expressly 4 to 6 cavities or 72 to 74 thin film layers.

Tai teaches 3 to 5 cavity filters (Fig. 12 for example) used in a system (Fig. 2) comprising similar components of the system taught by Adair, just with a different filter.

Adair and Tai are analogous art because they are from the same field of endeavor, interleavers comprising a dual fiber collimator, single fiber collimator, thin film filters and fiber (input, passing and reflecting) for multiplexing.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to replace the filter taught by Adair with the one taught by Tai in the system taught by Adair and to maximize the number of thin films used for the particular function and system as taught by Adair since the systems function the same are comprising similar structures.

Applicant has not disclosed that exactly 4 to 6 cavities or 72-74 thin film layers provides an advantage, is used for a particular purpose, or solves a stated problem.

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990).

The motivation for doing so would have been to increase transmission efficiency by adding more cavities and therefore improving reflectivity and transmission (Tai, column 7 lines 23-26, 45-48).

4. **Claims 7 and 30** are rejected under 35 U.S.C. 103(a) as being unpatentable over Adair as applied to claims 1-2, 8, 23-25 and 27-28 above, and further in view of **Pelekhaty (US 6,215,592 B1)**.

Adair teaches the interleaver described above.

Adair does not teach expressly the thin film layers being one-quarter thick layers (of the medium wavelength) or channel spacing of 20 nm.

Pelekhaty teaches an interleaver (Figs. 11 and 13-14) comprising a dual fiber GRIN collimator (284), an optical substrate (part of 282), a thin film portion (282) having a plurality of thin film layer (66, 68) of quarter wavelength thickness (column 5 lines 19-24) and spacers (254, 258, 256, etc) applied to the substrate for allowing certain wavelengths to pass and reflecting other adjacent wavelengths, an input fiber (290) for receiving an optical signal, a reflection fiber (298) for receiving reflected signals from the thin film filter (282), a single fiber GRIM collimator (286) optically coupled to the dual fiber collimator (284) for receiving signals passed by the filter (282), matching layers (196) that may be glass or air (column 5 lines 9-11) that have an index of refraction that creates an efficient interface between the optical substrate (silica, column 11 lines 54-55) since the film may be air (refractive index of 1), and cavities (spacers as described above) having an index of refraction (glass) for matching the dual fiber collimator (which are known to be glass) to the air surrounding (index = 1). Pelekhaty further teaches that the channel spacing is varied by known system parameters including the refractive index and thickness of the spacers (column 5 lines 56-68).

Adair and Pelekhaty are analogous art because they are from the same field of endeavor, interleavers comprising a dual fiber collimator, single fiber collimator, thin film filters and fiber (input, passing and reflecting) for multiplexing.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the thin films of the filter taught by Adair to be quarter wavelength thick and to adjust the channel spacing via known system parameters as taught by Pelekhaty since the systems function the same are comprising similar structures.

Applicant has not disclosed that quarter wavelength thick thin films or about 20 nm channel spacing provides an advantage, is used for a particular purpose, or solves a stated problem.

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990).

The motivation for doing so would have been to increase design flexibility and interleaving functions by being able to design the filter to transmitting even and odd number channels and reflect corresponding odd and even channels (Pelekhaty column 6 lines 1-25).

5. **Claims 26 and 29** are rejected under 35 U.S.C. 103(a) as being unpatentable over Adair as applied to claims 1-2, 8, 23-25 and 27-28 above, and further in view of **Hellman et al (US 2003/0185513 A1)** (Hellman).

Adair teaches the interleaver described above.

Adair does not teach expressly using an aspheric lens to collimate.

Hellman teaches a filter package (Fig. 4) having a dual fiber collimator (14) that may be either a GRIN or aspheric lens (paragraph 0034)

At the time the invention was made, it would obvious to a person of ordinary skill in the art to either a GRIN or aspheric lens to collimate. Applicant has not disclosed that one or the other provides an advantage, is used for a particular purpose, or solves a

Art Unit: 2883

stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with both kinds because both are well known collimators in the art and Hellman shows an example that the two types are interchangeable in interleaving (filtering) application.

The motivation would have been to decrease cost and increase design flexibility by being able to use either type of lens depending on material availability and price.

Response to Arguments

6. Applicant's arguments with respect to the rejected have been considered but are moot in view of the new ground(s) of rejection necessitated by amendment.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan Lepisto whose telephone number is (571) 272-1946. The examiner can normally be reached on M-Th 7:30 AM - 5:30 PM.

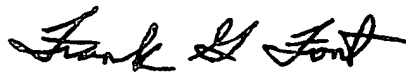
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2883

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Ryan Lepisto
Art Unit 2883
Date: 7/25/06



Frank Font
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